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APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
09/710,340	11/09/2000	Jeremy Francis Taylor	0987/62100/JRW/ADM	5056

7590 06/19/2002

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EXAMINER

SPIEGLER, ALEXANDER H

ART UNIT PAPER NUMBER

1637

DATE MAILED: 06/19/2002 ef

Please find below and/or attached an Office communication concerning this application or proceeding.

# Office Action Summary

Application No.

09/710,340

Applicant(s)

TAYLOR ET AL.

Examiner

SPIEGLER

Art Unit

1637

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

## Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If the period for reply specified above is less than thirty (30) days, a reply within the statutory minimum of thirty (30) days will be considered timely.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133).
- Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

## Status

1) ☒ Responsive to communication(s) filed on utility application filed 11/09/00.

2a) ☐ This action is FINAL.

2b) ☒ This action is non-final.

3) ☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

## Disposition of Claims

4) ☒ Claim(s) 1-23 is/are pending in the application.

4a) Of the above claim(s) \_\_\_\_\_ is/are withdrawn from consideration.

5) ☐ Claim(s) \_\_\_\_\_ is/are allowed.

6) ☒ Claim(s) 1-23 is/are rejected.

7) ☐ Claim(s) \_\_\_\_\_ is/are objected to.

8) ☐ Claim(s) \_\_\_\_\_ are subject to restriction and/or election requirement.

*Sharon N. Thornton*  
**SHARON N. THORNTON**  
**PATENT ANALYST**

## Application Papers

9) ☐ The specification is objected to by the Examiner.

10) ☐ The drawing(s) filed on \_\_\_\_\_ is/are: a) ☐ accepted or b) ☐ objected to by the Examiner.

Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).

11) ☐ The proposed drawing correction filed on \_\_\_\_\_ is: a) ☐ approved b) ☐ disapproved by the Examiner.

If approved, corrected drawings are required in reply to this Office action.

12) ☐ The oath or declaration is objected to by the Examiner.

## Priority under 35 U.S.C. §§ 119 and 120

13) ☐ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).

a) ☐ All b) ☐ Some \* c) ☐ None of:

1. ☐ Certified copies of the priority documents have been received.

2. ☐ Certified copies of the priority documents have been received in Application No. \_\_\_\_\_.

3. ☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).

\* See the attached detailed Office action for a list of the certified copies not received.

14) ☐ Acknowledgment is made of a claim for domestic priority under 35 U.S.C. § 119(e) (to a provisional application).

a) ☐ The translation of the foreign language provisional application has been received.

15) ☐ Acknowledgment is made of a claim for domestic priority under 35 U.S.C. §§ 120 and/or 121.

## Attachment(s)

1) ☒ Notice of References Cited (PTO-892)

2) ☐ Notice of Draftsperson's Patent Drawing Review (PTO-948)

3) ☒ Information Disclosure Statement(s) (PTO-1449) Paper No(s) 2

4) ☐ Interview Summary (PTO-413) Paper No(s) \_\_\_\_\_.

5) ☐ Notice of Informal Patent Application (PTO-152)

6) ☐ Other:

## DETAILED ACTION

### *Information Disclosure Statement*

1. The information disclosure statement of Paper No. 6 complies with U.S.C. 1.97, 1.98, and M.P.E.P. 609, and has been considered.

### *Claim Rejections - 35 USC § 112*

2. The following is a quotation of the second paragraph of 35 U.S.C. 112:

The specification shall conclude with one or more claims particularly pointing out and distinctly claiming the subject matter which the applicant regards as his invention.

3. Claims 1-23 are rejected under 35 U.S.C. 112, second paragraph, as being indefinite for failing to particularly point out and distinctly claim the subject matter which applicant regards as the invention.

A) Claims 1-23 over “determining a population **prior genotype probability**” because it is not clear as to what is meant by this recitation. (i.e. should this determination occur prior to genotyping?). The specification does not define “prior genotype probability”. In addition, it is not clear as to how one determines a **population** prior genotype probability **for each individual**.

B) Claims 1-23 over “using knowledge concerning the individual which is available prior to genotyping the individual” because it is not clear as to what “knowledge concerning the individual available prior to genotyping” is.

C) Claims 1-23 over “the alleles”, “the marker loci”, “the identified genotype” because these recitations lack antecedent basis. In step 1(f and g), “the population” lacks antecedent basis.

D) Claims 1-23 over “based on the identified genotype of the individual” because this is not an active process step, and could be amended or deleted.

E) Claims 1-23 over “population genotype probability” because it is not clear what is meant by this recitation, and furthermore, this recitation is not defined in the specification. Furthermore, it is not clear as to what is meant by “population genotype probability...under a null hypothesis that the individual arose from the population”. It is not clear which population is being referred to, and furthermore, it is not clear as to this relates to a “null hypothesis”.

F) Claims 1-23 over “population posterior probability” and “posterior genotype probability” because it is not clear what is meant by these recitations, and furthermore, these recitations are not defined in the specification.

G) Claims 1-23 over “a most likely population of origin” because it is not clear what is meant by this recitation, and furthermore, this recitation is not defined in the specification.

H) Claims 2-9 are indefinite over “a threshold value” because it is not clear as to what this “threshold value” is and how it is determined.

I) Claim 3 is indefinite because it is not clear as to what probability is computed. In addition, “the population of origin” lacks antecedent basis.

J) Claims 5 and 8 are indefinite because it is not clear how the sample of individuals from each candidate population “who are independent of individuals” are used to characterize each candidate population.

K) Claim 9 is indefinite because it is not clear as to how the threshold value is “varied” to reduce the percentage of individuals who are incorrectly classified to a population.

L) Claim 14 is indefinite because it is not clear as to what is meant by “prior genotype probability is set to equal a proportion of total population size that comprises each candidate population of origin”.

M) Claim 15 is indefinite over “assumed to be uniform” because it is not clear what is meant by this recitation.

N) Claims 20-21 over “desirable trait” because it is not clear as to what a “desirable trait” is and how determines a “desirable trait”, especially for different animals. This recitation is not defined in the specification.

O) Claims 22-23 over “undesirable trait” because it is not clear as to what a “desirable trait” is and how determines a “undesirable trait”, especially for different animals. This recitation is not defined in the specification.

***Claim Rejections - 35 USC § 102***

4. The following is a quotation of the appropriate paragraphs of 35 U.S.C. 102 that form the basis for the rejections under this section made in this Office action:

A person shall be entitled to a patent unless –

(b) the invention was patented or described in a printed publication in this or a foreign country or in public use or on sale in this country, more than one year prior to the date of application for patent in the United States.

5. Claims 1-9, 14-16 and 18-19 are rejected under 35 U.S.C. 102(b) as being anticipated by Waser et al. (Trends in Ecol. Evol. (1998) 13(2): 43-44).

Waser teaches the method of assigning an individual to a population of origin comprising:

1) remove the test individual's genotype from the population it was sample in an estimate the allele frequencies at each locus;

- 2) determine the genotype's expected frequency in that population at each locus;
- 3) multiply across loci and log-transform the product;
- 4) perform the same calculations to estimate the genotype's frequency in other putative source populations; and
- 5) assign the genotype to the population in which it has the highest log likelihood of occurrence (pg. 43) (claims 1-9 and 14-15).

With respect to claim 16, the reference teaches that the assignment test assumes that the populations are in Hardy-Weinberg equilibrium and Gametic Phase Equilibrium (pg. 43). With respect to claims 18 and 19, the reference teaches that fish have been assigned using the above method (pg. 43).

#### *Claim Rejections - 35 USC § 103*

6. The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

(a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negated by the manner in which the invention was made.

7. Claims 10-13 and 17 are rejected under 35 U.S.C. 103(a) as being unpatentable over Waser et al. (Trends in Ecol. Evol. (1998) 13(2): 43-44), as applied to claims 1-9, 14-16 and 18-19 above, and further in view of Andersson et al. (USPN 6,183,955).

The teachings of Waser are presented above. Specifically, Waser teaches a method of assigning an individual to a population through genotyping. Waser does not teach assigning an individual by genotyping based on a morphological feature, such as coat color.

Andersson teaches the importance of coat color in pigs:

“Coat colour is important to the pig breeding industry for a number of reasons. Firstly, in a number of markets there is a preference for **white** (i.e. nonblack) skinned meat. This is due to the fact that pork is often marketed with the skin still attached, and skins from coloured pigs, even if dehaired, can still exhibit coloured hair roots, which can lead to a negative perception by the consumer, since the surface of the meat may appear to be spotted by mould. It is necessary, therefore, in these markets, to remove the skin from such carcasses, entailing additional cost. For example, in the U.S., coloured carcasses are associated with approximately 1% of skin defects requiring dehairing and skinning to remove pigment. As a result of this, coloured pig carcasses are generally discounted. Secondly, gross variation in the appearance (i.e. a range of coat colours) of pigs claimed to be genetically consistent for traits other than coat colour can lead to questions about the consistency and quality of the animals in the mind of pig-producing customers. In addition, pig breeders would like to be able to be in a position to ensure consistency in breeding populations. Thus, breeders may wish to ensure that progeny produced by breeding crosses were always white.” (col. 1, ln. 17-36).

Andersson does not stress that the pigs origin must be in Hardy-Weinberg or Gametic Phase Equilibrium.

In view of the teachings of Andersson, it would have been obvious to one of ordinary skill in the art at the time the invention was made to have modified the method of Waser so as to have assigned a pig to a population based on color coat, in order to have achieved the benefit of providing an a better quality and more popular product for market consumption.

8. Claims 20-21 are rejected under 35 U.S.C. 103(a) as being unpatentable over Waser et al. (Trends in Ecol. Evol. (1998) 13(2): 43-44), as applied to claims 1-9, 14-16 and 18-19 above, and further in view of Stone et al. (J. Anim. Sci. (June 1999) Vol. 77 (6): 1379-1384).

The teachings of Waser are presented above. Specifically, Waser teaches a method of assigning an individual to a population through genotyping. Waser does not teach assigning an individual by genotyping based on a desirable trait.

Stone teaches a primary screen of the bovine genome for quantitative trait loci affecting carcass and growth traits. Specifically, Stone teaches a genomic screen for quantitative trait loci affecting carcasses and growth traits by genotyping 238 microsatellite markers on progeny from

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cows (pg. 1379). Stone teaches the following growth traits were analyzed by quantitative trait loci (QTL): dressing percentage, marbling, yield grade, rib-eye muscle, (pg. 1379). The reference also teaches that genotyping quality traits can also be used for improving the genetic selection process (pg. 1379).

In view of the teachings of Stone, it would have been obvious to one of ordinary skill in the art at the time the invention was made to have modified the method of Waser so as to have assigned an individual to a population based on a desirable trait, in order to have achieved the benefit of providing an a better quality and more popular product for market consumption.

9. Claims 22-23 are rejected under 35 U.S.C. 103(a) as being unpatentable over Waser et al. (Trends in Ecol. Evol. (1998) 13(2): 43-44), as applied to claims 1-9, 14-16 and 18-19 above, and further in view of Keele et al. (J. Anim. Sci. (June 1999) Vol. 77 (6): 1364-1371).

The teachings of Waser are presented above. Specifically, Waser teaches a method of assigning an individual to a population through genotyping. Waser does not teach assigning an individual by genotyping based on a undesirable trait.

Keele teaches a region on bovine chromosome 15 influences beef longissimus tenderness in steers. Specifically, Keele teaches a genome scan wherein DNA markers were collected from the longissimus muscle from progeny of a bull and cow cross, wherein QTL was used to identify beef tenderness (pg. 1364). The reference also teaches that tough meat is an important problem facing the beef cattle industry (pg. 1364). The reference further teaches that improving meat tenderness would improve the acceptability of beef produced in tropical and subtropical regions (i.e. meat toughness does not affect the acceptability in other regions) (pg. 1364).



In view of the teachings of Keele, it would have been obvious to one of ordinary skill in the art at the time the invention was made to have modified the method of Waser so as to have assigned an individual to a population based on an undesirable trait, in order to have achieved the benefit of providing an equally effective product for market consumption in areas other than tropical and subtropical regions.

*Conclusion*

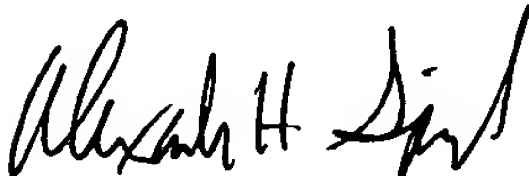
10. No claims are allowable.

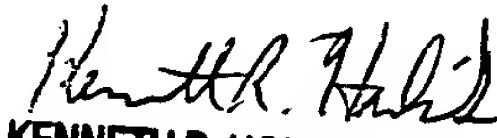
*Correspondence*

Any inquiry concerning this communication or earlier communications from the examiner should be directed to Alexander H. Spiegler whose telephone number is (703) 305-0806. The examiner can normally be reached on Monday through Friday, 7:00 AM to 3:30 PM.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Gary Benzion can be reached on (703) 308-1119. The fax phone numbers for the organization where this application or proceeding is assigned are (703) 308-4242 and (703) 305-3014. Applicant is also invited to contact the TC 1600 Customer Service Hotline at (703) 308-0198.

Any inquiry of a general nature or relating to the status of this application or proceeding should be directed to the receptionist whose telephone number is (703) 308-0196.

  
Alexander H. Spiegler  
June 13, 2002

  
KENNETH R. HORLICK, PH.D  
PRIMARY EXAMINER  
6/13/02